

VOTING SYSTEMS IN MICHIGAN

by

**Jessica Runnels
Fiscal Analyst**

September 2001

THE SENATE FISCAL AGENCY

The Senate Fiscal Agency is governed by a board of five members, including the majority and minority leaders of the Senate, the Chairperson of the Appropriations Committee of the Senate, and two other members of the Appropriations Committee of the Senate appointed by the Chairperson of the Appropriations Committee with the concurrence of the Majority Leader of the Senate, one from the minority party.

The purpose of the Agency, as defined by statute, is to be of service to the Senate Appropriations Committee and other members of the Senate. In accordance with this charge the Agency strives to achieve the following objectives:

1. To provide technical, analytical, and preparatory support for all appropriations bills.
2. To provide written analyses of all Senate bills, House bills and Administrative Rules considered by the Senate.
3. To review and evaluate proposed and existing State programs and services.
4. To provide economic and revenue analysis and forecasting.
5. To review and evaluate the impact of Federal budget decisions on the State.
6. To review and evaluate State issuance of long-term and short-term debt.
7. To review and evaluate the State's compliance with constitutional and statutory fiscal requirements.
8. To prepare special reports on fiscal issues as they arise and at the request of members of the Senate.

The Agency is located on the 8th floor of the Victor Office Center. The Agency is an equal opportunity employer.



Gary S. Olson, Director
Senate Fiscal Agency
P.O. Box 30036
Lansing, Michigan 48909-7536
Telephone (517) 373-2767; TDD (517) 373-0543
Internet Home Page <http://www.senate.state.mi.us/sfa/>

ACKNOWLEDGMENTS

The author would like to thank the representatives of each vendor for their assistance, as well as Chris Thomas, Brad Wittman, and Mike Ryder at the Bureau of Elections. Word processing support was provided by Pat Stinton-Harper, the SFA General Government Unit Secretary.

TABLE OF CONTENTS

INTRODUCTION	1
PART I: THE RECOMMENDATIONS OF THE SECRETARY OF STATE	1
Recommendation 1: A Statewide, Uniform Voting System	1
Recommendation 2: Early Voting Program	3
Recommendation 3: Coordinated Training of Election Inspectors	5
Recommendation 4: Provisional Ballot for Voters with Registration Irregularities	5
PART II: OPTICAL SCAN AND DIRECT RECORDING ELECTRONIC VOTING SYSTEMS APPROVED IN MICHIGAN	6
Optical Scan	6
Direct Recording Electronic Voting Systems	7
CONCLUSION	10

INTRODUCTION

Election reform is enjoying a wave of popularity following the 2000 U.S. presidential election. The election problems in Florida have many states looking at their own election and voting systems to avoid similar experiences. Michigan is no exception. Part I of this report describes the recent recommendations by Secretary of State Candice Miller for election reform in the State of Michigan. The focus of the recommendations is the adoption of a statewide, uniform voting system. Part II describes the voting systems currently approved for use in the State that would be eligible as a statewide, uniform voting system.

Five different types of voting systems are presently used in the State of Michigan: optical scan, punch cards, lever machines, paper ballots, and direct recording electronic systems (generally, touch-screen computers). According to the 2000 Precinct Report published by the Bureau of Elections, there are 5,376 precincts in the State: 3,006 using optical scanning systems, 1,443 using punch cards, 693 using lever machines, 137 using paper ballots, and 97 using touch-screen computer terminals. The State has the task of certifying voting systems for use in Michigan. Cities and townships decide which voting system will be used in each precinct and are responsible for ballot printing for local elections. Counties are responsible for printing the ballots for statewide elections.

PART I: THE RECOMMENDATIONS OF THE SECRETARY OF STATE

On May 17, 2001, the Secretary of State released her recommendations for improving voting processes in the State of Michigan. The Bureau of Elections is the component of the Department of State that administers the Secretary's election decisions. The Secretary's recommendations consisted of four parts that addressed the machines used for voting, when citizens may vote, training of election inspectors, and voter registration problems on election day (the report is available online at the Secretary of State website). Some of the recommendations depend upon the implementation of the others. The report stated that the cost of implementing the proposed uniform voting system would be \$26.1 million to 38.7 million over four years. An estimate of the cost of implementing the other recommendations was not provided.

Recommendation 1: A Statewide, Uniform Voting System

The report's primary recommendation was, "that the state fund a statewide, uniform optical scan voting system that employs 'precinct based' tabulation technology". The report established three principal criteria for a statewide uniform voting system. The first was equal protection against ballot spoilage and vote loss, a concern rooted in the U.S. Supreme Court's decision in *Bush v Gore*. The second was a preference for precinct-based tabulation. The third criteria was the realization of cost savings and efficiencies resulting from standardized materials and training of election inspectors.

Proposal

The Bureau of Elections envisioned a system in which every precinct in the State would have the same optical scan voting system (a detailed description of optical scan voting systems is included in Part II of this paper). The Bureau believes that this would be the least expensive

option and would facilitate the most rapid vote accumulation. Under this proposal, each tabulator in a precinct sends the vote count information to the county, which then sends it to the State. This process is easiest if the software performing the operation is compatible between each level of vote accumulation. To implement the system, the Bureau would proceed with a competitive bid process in which each bidder submitted a proposal for providing the tabulators and vote accumulation hardware and software for the entire State over a period of four years. Implementation of the system would be prioritized. In the first year, those jurisdictions not currently using an optical scan system would receive one. In the subsequent three years, the State would replace the existing system, beginning with those that are oldest.

Choosing the optical scan system for the uniform voting system is logical since it is currently the most widely used system in the State, with 56% of precincts employing it. Presumably, more voters would be comfortable using this system than any other voting system. Additionally, a voting technology study completed in July 2001 by the California Institute of Technology (Cal Tech) and the Massachusetts Institute of Technology (MIT) stated that optical scan and hand-counted paper ballots have the best overall performance with the fewest incidents of uncounted, unmarked, and spoiled ballots.¹ Optical scan voting systems have almost the least amount of equipment to store, second only to paper ballots which require no equipment storage.

The report preferred "precinct-based" tabulation over "central count" tabulation. Optical scan systems can fulfill this objective. For precinct-based tabulation, the voter feeds the ballot into a counting machine, called a tabulator. The optical scan tabulators that count the votes can be programmed to reject ballots that are spoiled or have mistakes, such as overvoting. This system offers voters an opportunity to void the spoiled ballot and fill out a new one. With central count tabulation, on the other hand, the ballots are stored until after the polls close. They are then transported to a central location for tabulation. When the ballots are finally counted, spoiled ballots will remain uncorrected. The tabulator may point out the mistakes, but the ballot must be accepted. In this case, the mistaken vote is disqualified and the remainder of the ballot is counted. This tabulation system leaves voters with no chance to fill out a fresh ballot. Additionally, the results of the election are delayed while all the ballots are counted entirely after the polls close.

Cost Analysis

Over four years, the report suggested that the State provide a new optical scan voting system to every precinct in Michigan at a cost between \$26.1 million and 38.7 million. The equipment would include one tabulator per precinct, plus vote accumulation hardware and software. Throughout the transition, cities and townships would be responsible for maintenance and repair costs for the equipment and counties would be responsible for ballot printing. The purchase of this equipment would be a one-time occurrence and would not affect the current election responsibilities of county and local governments. Table 1 details the expenditures for implementation of a statewide, uniform voting system based on the cost estimate provided

¹"Voting: What Is, What Could Be", p. 21. (July 2001). California Institute of Technology and the Massachusetts Institute of Technology Voting Technology Report.

by the Secretary's report. The Secretary of State reached this cost estimate by obtaining approximations from current vendors. The range of the cost estimate reflects the range of prices provided by vendors.

Table 1

SECRETARY OF STATE ESTIMATED IMPLEMENTATION EXPENDITURES FOR A STATEWIDE, UNIFORM VOTING SYSTEM		
Year	Activity	Cost
One	Purchasing Optical Scan voting systems for precincts not currently using them.	\$14.0 million
Two	Initial replacement of existing optical scan systems.	\$4.0 to 8.2 million
Three	Continued replacement of optical scan systems.	\$4.0 to 8.2 million
Four	Continued replacement of optical scan systems.	\$4.0 to 8.2 million

Source: Uniform Voting in Michigan: A report to the Legislature presented by the Secretary of State.

The July 2001 Cal Tech/MIT voting technology study² estimated that optical scan systems cost \$6-\$8 per voter for purchase of the system and an additional \$1-\$2 per voter each year for operation of the system. Using this estimate, the State would spend between \$39.9 million and \$53.3 million on a statewide, uniform voting system for its 6,657,877 voters. This estimate was somewhat higher than the one provided in the Secretary of State's report. Also according to the voting technology study, counties, cities, and townships would collectively incur annual costs ranging from \$6.6 million to \$13.3 million. These costs may be higher or lower than the current expenses; however, they cannot be compared with the current costs since those records are kept by individual jurisdictions.

The difficulty in reaching a cost estimate for the program is due to the many pricing structures and factors that can apply. Usually, the cost of the system is negotiated between the local jurisdiction purchasing the system and the vendor. Factors determining the final cost include how many vote accumulation packages are necessary and how many connections to precincts are made. Additionally, bulk discounts are offered on voting systems. With these and many more factors contributing to the final cost, it is difficult to quantify accurately the cost of a system.

Recommendation 2: Early Voting Program

A second recommendation presented by the Secretary of State's report is an early voting program. This program would allow registered voters to vote up to two weeks prior to election day using Direct Recording Electronic (DRE) voting systems, or touch screen computers. This proposal was an effort to address the difficulties many voters have in getting

²Ibid.

to their precinct on election day. The Bureau of Elections suggested that the impact of an early voting program would depend on how knowledgeable voters are about the system and the extent to which candidates promote early voting in their effort to encourage voter turnout.

Current election law allows an elector to vote by absentee ballot only if he or she meets one or more of the following criteria: (1) on account of physical disability, cannot without another's assistance attend the polls on the day of an election; (2) on account of the tenets of his or her religion, cannot attend the polls on the day of election; (3) cannot attend the polls on the day of an election in the precinct in which he or she resides because of being an election precinct inspector in another precinct; (4) is 60 years of age or older; (5) is absent or expects to be absent from the township or city in which he or she resides during the entire period the polls are open for voting on the day of an election; or (6) cannot attend the polls on election day because of being confined in jail awaiting arraignment or trial (MCL 168.758).

Many people who do not meet these criteria still have trouble getting to their precinct during the allotted time. They may be out of town unexpectedly on election day, their work hours may make voting inconvenient, or other scheduling problems may arise. The report also suggested that the early voting program could be a way to boost voter participation rates since the actual voting process would be more convenient. The proposed early voting program would essentially make the election process two weeks long instead of a single day. Authorizing legislation would need to be adopted for an early voting program to be implemented.

The DRE design was chosen for the early voting program because it can store multiple ballots for use on the same unit. The systems approved in Michigan are touch screen computers that can sit in the temporary voting booths currently used in many precincts. (A detailed description of selected systems used in Michigan is included in Part II of this paper.) Voters from different precincts could vote on the same machine placed in a central location, such as the local city hall or the city clerk's office. The votes could be stored in the unit until final tabulation. The votes registered through the early voting program would be held until after the polls closed on election day and then released with the final tabulation of all registered votes for the election.

While the DRE voting systems may be the best suited for the early voting program envisioned by the Secretary of State, individual DRE units are costly. Implementing this program could be as expensive as purchasing optical scan systems for the entire State. A DRE unit costs approximately \$2,500. While only one optical scan tabulator is required per precinct, the number of DRE units required depends on the design and regulation of an early voting program. The aggregate cost of the DRE units would depend on how many units were purchased for cities and townships and the hardware and software that accompany the systems. The administration of such a program would be complex. For example, each precinct would have multiple ballots and local clerks' offices would need to staff the early voting site. The Bureau of Elections has not worked out these details; thus, no cost estimate for implementing an early voting program is provided in the proposal.

Recommendation 3: Coordinated Training of Election Inspectors

The training of election inspectors is currently handled at the county level. Cities with a voter population larger than 10,000 are allowed to conduct their own training sessions. Since many different voting systems are often operating within one county, large-scale training is not always possible. This recommendation is dependent upon the implementation of the proposed statewide, uniform voting system. If such a voting system were implemented, training sessions could be easier to coordinate and streamline. No detail is provided for coordinated training of election inspectors if a uniform voting system is not implemented.

The Bureau of Elections would develop informational materials, such as a training video, to supplement the training provided by counties. The State would assist counties and large jurisdictions with the development of their election inspector training programs. The recommendations also included State grants to county and local election officials for the purpose of conducting election inspector training programs, although no grant criteria were given.

Recommendation 4: Provisional Ballot for Voters with Registration Irregularities

The final recommendation of the Secretary's report addressed the problem of unclear voter registrations on election day. Sometimes the voter registration lists used by election inspectors do not include the name of someone who comes to the precinct to vote. The most common reason for this situation is that the voter is in the wrong precinct or that the voter missed the deadline to register to vote.

Under current law, a voter with questionable registration status must provide proof of residence within the precinct, such as a driver license, and sign an affidavit swearing that the voter did register prior to the voter registration deadline. The voter is then allowed to fill out a ballot, which is included with the vote count from that precinct. Under this procedure, the jurisdiction has no little opportunity for recourse should it be proved later that the voter provided false information.

The report suggests that a voter whose registration status is questionable be allowed to fill out a ballot and the ballot be set aside in an envelope, becoming a provisional ballot. If, under further investigation, it is determined that the voter was properly registered in that precinct, then the provisional ballot is included in the total count, and if the voter was not registered then the ballot is discarded.

While questionable registration status is uncommon, it is expected that the incidence of this situation will diminish further as Public Act 118 of 1999 reaches everyone. This law states that the address on a person's driver license is the address used to determine where he or she is registered to vote. As people renew their driver licenses and update their voter registrations, the Bureau of Elections expects fewer registration problems on election day.

PART II: OPTICAL SCAN AND DIRECT RECORDING ELECTRONIC VOTING SYSTEMS APPROVED IN MICHIGAN

Under current State law, vendors must submit to an approval process before municipalities may purchase their voting system for use in Michigan. The approval process for a voting system begins when a vendor submits a letter requesting approval to the Michigan Board of State Canvassers with a \$1,500 fee and relevant reports, contracts, operation manuals, and other materials. The Board of State Canvassers will put the voting system through a testing and evaluation process. The Board performs a field test with registered voters and election inspectors to obtain feedback and identify problems. The voting system also must be certified by an independent testing authority. Once the voting system receives the approval of the Michigan Board of State Canvassers, the vendor is free to market the system to municipalities. A newly purchased voting system must be used in at least one other election before being used in a November general election.

Although punch cards are approved for use in the State of Michigan, with the election and voting problems in Florida during the 2000 presidential election, it is unlikely that punch card voting systems will be expanded in Michigan. Punch card systems can have precinct-based tabulation and will continue to be used in the State unless a uniform voting system is implemented or the punch card systems are decertified. The two remaining systems in production are optical scan and direct recording electronic voting systems. These are the two types of systems recommended for use by the Secretary of State in the uniform voting report. Each type of the two voting systems has two approved products that are widely used in the State. The following is a review of these four voting options.

Optical Scan

Optical scan voting systems were first approved for use in Michigan in 1991 and they were first used in 1992. Currently, 58 counties, including 3,006 or 55.9% of precincts, use optical scan voting systems. The most popular system is the Optech model by Sequoia Pacific, comprising approximately two-thirds of the optical scan systems used. The second most widely used system is the Accu-Vote system by Global Elections. It is used in almost all of the remaining optical scan precincts.

With optical scan voting systems, voters receive a single paper ballot and make an appropriate mark next to the candidate of their choice. When finished filling out the ballot, voters insert it into the tabulating scanner. A message appears on a small screen on the scanner telling the voter whether the ballot is accepted or if there is a problem, such as an overvote. If there is a problem with the ballot, the voter then has the choice of filling out another ballot or having the scanner accept the original ballot and counting only the valid votes. Absentee voters use the same ballot as those used in the precincts on election day. A secrecy sleeve and marking utensil are included in the package sent to an absentee voter.

Vendors cite the ease of use and low initial costs as the primary advantages of optical scan voting systems. Problems with optical scan voting systems have focused mainly on voters overvoting and not understanding the process for handling spoiled ballots. Increased election inspector training could help alleviate the problem with handling spoiled ballots.

A precinct needs a tabulating scanner to accept ballots. Vendors provide training at initial implementation of the system as well as immediately prior to elections. Software is available for ballot printing and computer programming. Large jurisdictions generally purchase the software while small jurisdictions usually contract with a vendor for this service. The scanners for both systems are expected to last 20 to 25 years and can be upgraded as improvements are made to a system's design.

Vendors price tabulating scanners as single units and offer discounts if the machines are bought in bulk. Training and repair packages are negotiated by the jurisdiction and the vendor. The cost of these services depends on the number of training sessions desired and the required repairs. Ballot printing is an additional expense. Ballots are generated by the software, which is then sent to a ballot printing service. There are between 6 and 8 optical scan ballot printers in the State. Printing costs can range from \$0.10 to \$0.50 per ballot. The price per ballot is negotiated by the jurisdiction and the vendor or printer. Many factors influence the price of ballots, including the length of the ballot, the use of double-sided printing, the number of ballots printed, and the number of precincts involved.

The Optech by Sequoia Pacific

The Optech system is used in 2,115 precincts by 2.7 million voters. On an Optech ballot an arrow is shown with a break in its tail and the voter completes the arrow pointing at the candidate for whom he or she wishes to cast a vote. Precincts provide a black marker for voters to use in voting booths and a pencil is included in the package sent to absentee voters. A single Optech unit or tabulating scanner costs \$5,500 if bought individually. The ballot designing software expense is less than \$20,000 if purchased by large jurisdictions. Many factors, including the size of the jurisdiction, influence the cost of ballot software. Smaller jurisdictions often contract with a vendor to design the ballots, for a cost generally between \$100 and \$350. The cost depends on the size of the ballot and the size of the jurisdiction.

The Accu-Vote by Global Elections Systems

The Accu-Vote system is used in 921 precincts by 1.2 million voters. The Accu-Vote ballot requires voters to fill in a circle next to the name of the candidate they wish to vote for, similar to standardized testing answer sheets. Any common writing utensil may be used on the ballot, although black markers are provided by precincts and a pencil is included in the package sent to absentee voters.

A single Accu-Vote tabulating scanner costs \$4,500 if bought on an individual basis. The ballot designing software costs between \$50,000 - \$100,000. Many factors, including the size of the jurisdiction, influence the cost of ballot software. When smaller jurisdictions contract for the computer programming with the vendor, the costs are usually between \$600 and \$4,500, depending upon the size of the ballot and the size of the jurisdiction.

Direct Recording Electronic Voting Systems

Direct recording electronic (DRE) voting systems are touch screen computer terminals. Three DRE systems are approved in Michigan. The Unilect system is the most used system, with four counties and 74 precincts. The Microvote system is the second most used DRE system in the State, with one county and 23 precincts. The third approved DRE system is the Fidar

Doubleday system, which is not currently used in any precinct.

The DRE units are about the size of the desktop hard drive of a personal computer. The terminals can be used in the voting booths currently used in precincts with punch card or optical scan ballots. A liquid crystal display screen is built into the top of the unit and all instructions are seen on the screen. The voter touches the name of the candidate he or she wishes to vote for and the name is highlighted. To change the vote, the voter touches the already chosen name again for the highlight to disappear and then touches the name of another candidate. A prompt is given to the voter to advance to the next page. Voters may return to any screen before their vote is cast. When the ballot is finished, voters cast all of the votes by pressing a separate button.

Both DRE systems in use have a central control panel in each precinct. This panel activates each voting machine to allow a voter to cast a ballot. An election inspector operates the control panel. A light on the panel indicates whether a terminal is in use or available for another voter. Once the voter has completed the ballot and cast his or her vote, the voting machine shuts down until it receives a signal from the control panel to start another ballot cycle. A vote tally may be printed at the precinct, the data may be stored on a data card and taken to the location of a central computer, or the data may be transferred electronically over a telephone-modem connection to a central computer. The systems are expected to last approximately 25 years and can be upgraded as improvements are made to their design.

The number of voting stations per precinct is limited to the number of voting machines. Precincts with touch-screen computer terminals may have fewer voting stations per precinct and, thus, a larger number of voters per station. This may precipitate longer lines and waiting times for voters. Michigan law dictates that there be at least one machine for every 300 voters registered in each precinct (MCL 168.796a). There are some jurisdictions that would require only a single DRE unit, while the City of Detroit would need between 2,000 and 3,000 DRE units. Each local election commission must evaluate whether a ratio of one machine to every 300 voters is sufficient. The commission considers the length of ballots, the number of voters per precinct per hour, and projected voter turnout. If it is determined that additional voting units are necessary to ensure a smooth election day, then the local election commission must purchase the additional units. This requirement may serve to increase the cost of implementing a DRE voting system in a jurisdiction.

Vendors cite the accuracy of recording votes as the advantage of DRE voting systems; however, the initial implementation costs are much higher than the costs of the optical scan systems. No overvote may occur since the software is programmed to limit the number of selections in each race. Another benefit vendors promote is the absence of ballot printing costs.

The Cal Tech/MIT voting technology report cites a problem with residual or falloff voting associated with the use of DRE systems.³ In this circumstance the voter does not register a vote for a race, often due to a misunderstanding of how the DRE unit operates. The result is

³Ibid. p. 21

a high rate of uncounted and unmarked ballots. The voting technology report states that after 15 years, the aggregate costs of a DRE voting system and an optical scan voting system are approximately the same.

Absentee voting in jurisdictions with DRE systems uses an optical scan card resembling a standardized test answer sheet with numbers next to open circles. The voter is given a ballot guide for his or her precinct and the candidates in the guide coincide with the numbers on the ballot. The voter returns the ballot, which is fed through a scanner to record the votes. Unused absentee ballot cards may be saved for future use since they have no markings that identify a specific year or precinct.

The Patriot by Unilect

This is the most widely used DRE system in Michigan, with 74 precincts (1.3%) using the Patriot by Unilect. This system is networked only within a precinct for security against outside tampering. At the end of the election day, a single button compiles the totals from all of the machines.

Jurisdictions order packages consisting of the software, hardware, warranty, and training. The cost of this package will vary depending on the size of the jurisdiction, the number of training sessions desired, and other options. A single terminal costs \$2,000 for a black and white screen or \$2,500 for a color screen. The vendor recommends a ratio of at least one machine per 300 registered voters, consistent with State law. Each precinct also needs one control unit and data card to program ballots, which cost \$2,700. The vendor also recommends that each jurisdiction purchase a single computer specifically for the purpose of election result tabulation.

The MicroVote MV464 by MicroVote

The MicroVote system is used only in Mecosta County, which has 23 precincts. A tally is recorded by each machine individually and compiled on a data card. For large jurisdictions, the MicroVote system allows precincts to report to a regional receiving site, which then sends the data to a central location for tabulation.

The MicroVote system costs \$4,450 for a single unit and the vendor recommends a ratio of at least one machine to 325 registered voters. The software for generating the ballot and final tabulation costs \$30,000. Licensing agreements are an additional cost and vary depending on the size of the jurisdiction. According to MicroVote, the most that any jurisdiction has ever paid for software and licensing agreements is \$100,000. Training for election inspectors is done at initial implementation and prior to subsequent elections, as requested. Local election officials also are trained to perform most repairs for the system, although they must order necessary parts from the manufacturer.

CONCLUSION

Many of the Secretary of State's recommendations for voting reform in the State of Michigan are supported by the Cal Tech/MIT voting technology study.⁴ Both of these recent reports discuss standardization of voting processes and policies, provisional ballots, and alternative voting times. According to these reports, optical scan systems appear to be the preferred voting system for the near future. The primary obstacle to implementing a statewide, uniform voting system is the cost, since it is difficult to predict the availability of Federal funds for voting reform and State revenues are declining. Future debate about voting systems in Michigan will likely center around what options are a priority and what options are affordable.

⁴Ibid.